'82 MAY 28 AM 9 43

santa fe minerals, inc. A Subsidiary of Santa Fe International Corporation

DIVISION OF OIL AND GAS
RECEIVED
JUN 1 1982
WOODLAND, CALIFORNIA

DIVISION OF OIL AND GAS
RECEIVED
JUN 1982
WOODLAND, CALIFORNIA

May 28, 1982

Mr. John C. Sullivan
Deputy Supervisor
Division of Oil & Gas
117 West Main St.
Suite 11
Woodland, CA 95695

Water Disposal Well
B.C. 2 - #57
Sutter Buttes Gas Field

Dear Mr. Sullivan,

In reply to your letter of May 21, 1982, requesting information which qualify an aquifer for exemption. Due to the very short time limit involved I will attempt to provide as much data as immediately available.

In Reply to Item I of Attachment B:

The Kione zone is not currently serving as a source of drinking water. I have attached as attachments No. 1 and No. 2 geochemical Analysis of produced Kione water from Santa Fe operated wells in Sec 6, T15N, R2E. I can tell you that you cannot drink Kione water produced in the SBGF.

During the conversion of well #57 we perforated the Kione at 3,580' to 3,570' and swabbed the zone to recover formation water prior to injection, see DOG form 103 dated April 8, 1982. A sample of this water has been sent to Hornkohl Laboratories for Geochemical Analysis with instruction for a copy of the results to be sent directly to you, we also requested a TDS analysis.

In Reply to Item IV of Attachment B:

A: See above declaration. I have included analysis of our Domestic Water well water as Attachment No. 3, the well is 200' deep, will pump at 200 GPM, and while suitable for industrial use and livestock tastes so bad we buy our drinking water in town. Our water well is used during the summer for livestock and our neighbors garden. I have included analysis of some spring water from one of best springs in the area, never has completely dried up regardless of drought conditions as attachment No. 4. This spring water tastes horrible and sheep and wildlife are all that use the spring.

B: See forthcoming analysis of Kione water.

Attachment

14367 Pass Road • Live Oak, California 95953 • Telephone (916) 696-2607, 696-2514

C: Based on pressure of 1,567 psi at a depth of 3,575' it is assumed the Kione Zone in Well #57 will surface water and possibly flow , no idea of any rates.

D: Top perforation of well #57 injection zone is at 3,077'. The deepest domestic well I know of is an orchard irrigation well located 2,500'± Southeast, this well was projected to drill to 500'±; however, they found so much suitable water at 350'± they quit drilling. DWR might know of deeper irrigation wells, I don't know of anybody that could afford to lift irrigation water 1,000'.

E: Location of well #57 is 1,228'N and 3,864'W of the SE Corner of Sec 5, T15N, R1E, M.D. B&M.

1. Nearest "Town" is the community of Meridian which is 2.6 Miles Southwest of #57.

2. Surface owners are James and Clareen Tarke, 3,450 West Butte Road, Sutter, CA, 95982.

3. All domestic water from relatively shallow wells (50' to 200'), irrigation and livestock water from wells and Butte Creek (part of Sutter Bypass System), all wells less than 1,000' deep. A few man-made ponds for retaining runoff in the Buttes, usually dry by mid-summer. Ownership of Butte Creek water in litigation for past 5-6 years in Federal Court.

4. None in this location.

Yours very truly,

Ben F. Phillips, Jr.

BFP/lc

Enclosures

TELEPHONE (805) 327-8567 P.O. BOX 867

HORNKOHL LABORATORIES, Inc.

CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA 93302

August 17, 1970

Laboratory No. 204549 *Marked* Well #64, Produced Water, 8-4-70.

Sample Water

Received August 8, 1970 Purchase Order #12636

Submitted by Santa Fe Minerals, Inc.
A Subsidiary of Santa Fe International Corporation
14367 Pass Road
Live Oak, California 95953
Attn: BEn Phillips

* * * * * * *

PALMER HYDROLOGY ANALYSIS

Constituents:		Parts per Million	Grains per Gallon	Reacting Values	Reacting Values Per Cent
Carbonates, CO_3	---	0.0	0.00	0.00	0.00
Bicarbonates, HCO_3	---	762.5	44.59	12.50	8.41
Chlorides, Cl	---	2184.0	127.72	61.60	41.43
Sulfates, SO_4	---	11.5	0.67	0.24	0.16
Sulfides, S	---	0.0	0.00	0.00	0.00
Calcium, Ca	---	19.6	1.15	0.98	0.66
Magnesium, Mg	---	15.1	0.88	1.24	0.83
Sodium, Na	---	1659.0	97.02	72.12	48.51
Totals:	---	4651.7	272.03	148.68	100.00
Boron, B	---	24.89	1.46		
Hardness as $CaCO_3$	---	111.0	6.49		
Salt as NaCl	---	--	210.58		
pH-Value @ 25°C.	7.8				

Primary Salinity	--	83.18		
Secondary Salinity	--	0.00		
Total Salinity	--	83.18	--	83.18
Primary Alkalinity	--	13.84		
Secondary Alkalinity	--	2.98		
Total Alkalinity	--	16.82	--	16.82
				100.00

Per Cent Sulfates in Sulfates plus Chlorides	--	0.384
Carbonate-Chloride Ratio	--	0.000
Carbonate-Sulfate Ratio	--	0.000
Alkali-Alkaline Earth Ratio	--	32.557
Resistivity, Ohm Meters @ 25°C.	--	1.60

Respectfully submitted,
HORNKOHL LABORATORIES, INC.

E. R. Starbuck Jr.

E. R. STarbuck, Jr.,
Assistant Chief Chemist

ap

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING YOUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.

TEL. FAirview 7-8567

P.O. BOX 867

HORNKOHL LABORATORIES, Inc.

CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA

November 4, 1964

Laboratory No. 158,782 *Marked* 10/20/64 - Well #70 DST #2, WBD #1 2495 - 2500'

Sample Water

Received November 2, 1964

Submitted by Santa Fe Drilling Company
Route 2, Box 689
Live Oak, California

****

PALMER HYDROLOGY ANALYSIS

Constituents		Parts per Million	Grains per Gallon	Reacting V Reacting Values	Per Cent
Carbonates	(CO_3)	180.0	10.53	6.00	2.82
Bicarbonates	(HCO_3)	1128.5	65.99	18.50	8.69
Chlorides	(Cl)	2900.6	169.63	81.80	38.41
Sulphates	(SO_4)	9.1	0.53	0.19	0.09
Sulphides	(S)	0.0	0.00	0.00	0.00
Calcium	(Ca)	75.2	4.40	3.76	1.77
Magnesium	(Mg)	51.7	3.02	4.24	1.99
Sodium	(Na)	2264.3	132.42	98.49	46.23
TOTALS		6609.4	386.52	212.98	100.0
Boron		55.55	3.25		
Hardness as $CaCO_3$		400.00	23.39	8.00	
Salt as NaCl			279.63		
pH	8.0				
Primary Salinity		77.00			
Secondary Salinity		0.00			
Total Salinity			77.00		
Primary Alkalinity		15.46			
Secondary Alkalinity		7.54			
Total Alkalinity			23.00		
			100.00		

% Sulphates in Sulphates / Chlorides -- 0.234
Carbonate - Chloride Ratio -- 0.073
Carbonate - Sulphate Ratio -- 31.333
Alkali - Alkaline Earth Ratio -- 12.295

Resistivity @ 25°C is 1.13 ohm meters

Respectfully submitted,
HORNKOHL LABORATORIES, INC.,

Technical Director

cg

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING OUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.

TELEPHONE (805) 327-8567 P.O. BOX 867

HORNKOHL LABORATORIES, Inc.

CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA 93302

August 17, 1970

Laboratory No. 204547 *Marked* Domestic Water Well, Sec. 32 T16N, RIE, M.O.B.+M, 8-4-70

Sample Water

Purchase Order #12636

Received August 8, 1970

Submitted by Santa Fe Minerals, Inc.
A Subsidiary of Santa Fe International Corporation
14367 Pass Road
Live Oak, California 95953
Attn: Ben Phillips

* * * * * * *

PALMER HYDROLOGY ANALYSIS

Constituents:		Parts per Million	Grains per Gallon	Reacting Values	Reacting Values per Cent
Carbonates, CO_3	---	0.0	0.00	0.00	0.00
Bicarbonates, HCO_3	---	211.7	12.38	3.47	40.63
Chlorides, Cl	---	19.9	1.16	0.56	6.56
Sulfates, SO_4	---	11.5	0.67	0.24	2.81
Sulfides, S	---	0.0	0.00	0.00	0.00
Calcium, Ca	---	36.4	2.13	1.82	21.31
Magnesium, Mg	---	16.3	0.95	1.34	15.69
Sodium, Na	---	25.5	1.49	1.11	13.00
Totals:	---	321.3	18.78	8.54	100.00
Boron, B	---	0.05	0.00		
Hardness As $CaCO_3$	---	158.0	9.24		
Salt as NaCl	---	--	1.91		
pH-Value @ 25°C.	7.3				

Primary Salinity	--	18.74			
Secondary Salinity	--	0.00			
Total Salinity	--	18.74	--	18.74	
Primary Alkalinity	--	7.26			
Secondary Alkalinity	--	74.00			
Total Alkalinity	--	81.26	--	81.26	
				100.00	

Per CEnt Sulfates in Sulfates plus Chlorides	--	29.989
Carbonate-Chloride Ratio	--	0.000
Carbonate-Sulfate Ratio	--	0.000
Alkaline-Alkaline Earth Ratio	--	0.351
Resistivity, Ohm Meters @ 25°C.	--	24.50

Respectfully submitted,
HORNKOHL LABORATORIES, INC.

E. R. Starbuck, Jr.,
Assistant ChiefChemist

ap

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING YOUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.

TELEPHONE (805) 327-8567 P.O. BOX 867

HORNKOHL LABORATORIES, Inc.

CHEMICAL AND TESTING ENGINEERS
714 TRUXTUN AVENUE
BAKERSFIELD, CALIFORNIA 93302

August 17, 1970

Laboratory No. 204548 *Marked* Spring Water, Sec. 34, T16N, R1E, M.D.B+M., 8-4-70

Sample Water

Purchase Order #12636

Received August 8, 1970

Submitted by Santa Fe Minerals, Inc.
A Subsidiary of Santa Fe International Corporation
14367 Pass Road
Live Oak, California 95953
Attn: Ben Phillips

* * * * * * *

PALMER HYDROLOGY ANALYSIS

Constituents:		Parts per Million	Grains per Gallon	Reacting Values	Reacting Values Per Cent
Carbonates, CO_3	---	18.0	1.05	0.60	8.24
Bicarbonates, HCO_3	---	153.7	8.99	2.52	34.62
Chlorides, Cl	---	8.5	0.50	0.24	3.30
Sulfates, SO_4	---	13.4	0.78	0.28	3.84
Sulfides, S	---	0.0	0.00	0.00	0.00
Calcium, Ca	---	29.6	1.73	1.48	20.33
Magnesium, Mg	---	16.1	0.94	1.32	18.13
Sodium, Na	---	19.3	1.13	0.84	11.54
Totals:	---	258.6	15.12	7.28	100.00
Boron, B	---	0.10	0.01		
Hardness as $CaCO_3$	---	140.0	8.19		
Salt as NaCl	---	--	0.82		
pH-Value @ 25°C.	8.5				

Primary Salinity	--	14.28			
Secondary Salinity	--	0.00			
Total Salinity	--	14.28	--	14.28	
Primary Alkalinity	--	8.80			
Secondary Alkalinity	--	76.92			
Total Alkalinity	--	85.72	--	85.72	
				100.00	

Per Cent Sulfates in Sulfates plus Chlorides	--	53.781
Carbonate-Chloride Ratio	--	2.497
Carbonate-Sulfate Ratio	--	2.146
Alkali-Alkaline Earth Ratio	--	0.300
Resistivity, Ohm Meters @ 25°C.	--	2.55

Respectfully submitted,
HORNKOHL LABORATORIES, INC.

E. R. Starbuck, Jr.

E. R. Starbuck, Jr.,
Assistant Chief Chemist

ap

ALL REPORTS ARE SUBMITTED AS THE CONFIDENTIAL PROPERTY OF CLIENTS. AUTHORIZATION FOR PUBLICATION OF OUR REPORTS, CONCLUSIONS OR EXTRACTS FROM OR REGARDING THEM IS RESERVED PENDING YOUR WRITTEN APPROVAL AS A MUTUAL PROTECTION TO CLIENTS, THE PUBLIC AND OURSELVES.